

Type I Progress Report

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- a. "Use of Satellite Imagery for Wildland Resource Evaluation  
in the Great Basin."

- b. GSFC Identification Number - U263

- c. Statement of Problems:

E7.3 1 0.0.1.8  
CR-129945

The exposure of the ERTS MSS imagery has been a major problem. Since mid-October, almost every frame in all bands has been moderately to extremely underexposed. The resultant darkness and reduction in contrast makes interpretation, and at times even identification of major features difficult.

Cloud cover is becoming an increasing problem. With the onset of winter, many of our study areas are obscured by cloud formations, preventing the analysis of these areas for which we have ground data.

Color composites from MSS data have not yet been received by the University of Nevada. We feel that color composites are an integral part of our investigation and we hope to receive this data in the near future. A more complete and meaningful evaluation of potential ERTS applications will thus be accomplished.

(E73-10019) USE OF SATELLITE IMAGERY  
FOR WILDLAND RESOURCE EVALUATION  
Progress Report, Dec. 1972 - Jan. 1973  
(Nevada Univ.) 9 p HC \$3.00 CSCL 08F

N73-15355

Unclas  
G3/13 00019

d. Accomplishments:

A detailed quantification of crested wheatgrass seedings within the state of Nevada has been made. County lines were first determined using a 1:1,000,000 scale map of Nevada. Within each county, seedings were identified, delineated, and quantified, using the MSS seven bands from September 13-17, 1972. This band has proven the most useful for identification and quantification of seedings. Large scale photography and reference maps verified many seedings, some of which were difficult to identify positively with ERTS imagery. The quantification was made using dot-grids and 1 mm squares and then converting to acres. Table 1 shows the acreage of seedings within the state of Nevada, broken down by county and land status. The land status of the seedings was derived by comparing their location on ERTS to a newly published 1:500,000 scale land status map of Nevada. This data will be continually updated as more imagery is acquired during the coming "growing season." Monitoring of these seedings may be useful in determining the initial grazing period for these areas. Changes in reflectivity will indicate changes in growth and vigor.

Identification and quantification of water bodies is being attempted. Again using ERTS imagery and the MSS seven band, most water bodies are easily identified. In some instances it has been necessary to refer to imagery of different dates for positive identification. Surface area of these water bodies is being calculated using dot-grids and 1 mm squares with the results then converted to acres.

Using ERTS sequential imagery, comparisons of water bodies at different dates is possible. An increase or decrease in water

quantity will be reflected in a corresponding increase or decrease of surface area. A knowledge of these changes is valuable in that they can be related to water consumption, evaporation, climatic conditions, and amount of potential irrigation water available, all of which are important in the arid Great Basin. Comparisons of these water bodies from date to date are now being summarized.

The phenology notes for the study areas have been summarized by date and by area. Changes in phenology can be easily noted and will be valuable in delineating vegetation communities by comparing these changes to changes visible on the sequential ERTS imagery. Sequential ERTS imagery is not available for the "growing season" during which the notes have been taken. However, significant comparisons are being made with U-2 data.

Fire scars, both recent and old, are being inventoried and monitored. A quantitative estimate of the number of acres burned may be obtained easily. The sequential nature of the ERTS data is particularly well adapted for this type of inventory.

Playas will also be inventoried. Sequential imagery will aid in detecting changes in these playas. Changes relating to surface moisture may be indicative of the relative soil moisture in the surrounding areas. With heavy precipitation in surrounding areas these playas tend to fill up with water. Some of these changes have already been observed.

Phreatophytic vegetation has been cursorily quantified along the Truckee River and the Las Vegas Wash, using ERTS imagery. Attempts at a more precise inventory of this vegetation will be made in the future.

With the advent of winter, much of the state has snow cover. Upon receipt of imagery during this period, attempts will be made to evaluate the effect of snow cover on the recognition of vegetation types. It is anticipated that snow cover may make recognition of some vegetation types more difficult, while for some, the recognition may be easier.

Pinon-Juniper woodland ecotones are in the process of being delineated. While many ecotones can be distinguished on ERTS data, much of this work must be done with the aid of ground truth and large scale photography. Eventually a vegetation map based on ERTS imagery will be developed for the state of Nevada.

e. Significant Results

Crested wheatgrass seedlings have been quantified for the state of Nevada, and have been broken down by county and land status. The wide coverage of ERTS has been found to be extremely useful for putting these seeded areas in the proper perspective for inventory.

In the same manner, water bodies are being inventoried and changes relating to time are being monitored. Water resources are critical in Nevada, and this should prove useful to land owners and land managers throughout the state.

- f. No published articles, papers, pre-prints, etc. have been released during this reporting period.
- g. No recommendations for practical change will be made at this time.
- h. No changes have been made in our standing order forms.
- i. Image Descriptor Forms - attached
- j. Data Request Forms - no data request forms were submitted during this reporting period.

Table 1. Seedings within the state of Nevada broken down by county and land status.\*

<u>County</u>	<u>Land Status</u>				<u>Acres Total</u>	<u>% of State Total</u>
	<u>Public Land Acres</u>	<u>%</u>	<u>Private Land Acres</u>	<u>%</u>		
Churchill	1,235	100.0	-	-	1,235	.1
Douglas	494	100.0	-	-	494	-
Elko	317,983	63.5	182,464	36.5	500,447	50.4
Eureka	42,344	85.5	7,200	14.5	49,544	5.0
Humbolt	83,492	69.6	36,427	30.4	119,919	12.1
Lander	42,849	94.7	2,400	5.3	45,249	4.6
Lincoln	63,585	97.1	1,920	2.9	65,505	6.6
Lyon	7,343	79.3	1,920	20.7	9,263	.9
Mineral	1,309	48.2	1,408	51.8	2,717	.3
Nye	36,810	86.8	5,600	13.2	42,410	4.3
Washoe	4,693	100.0	-	-	4,693	.5
White Pine	<u>141,270</u>	<u>93.2</u>	<u>10,240</u>	<u>6.8</u>	<u>151,510</u>	<u>15.2</u>
Total	743,407	74.9	249,579	25.1	992,986	100.0

\* Only those counties which have seedings are included.

# ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

DATE January 3, 1973

PRINCIPAL INVESTIGATOR Dr. P. T. Tueller, Assoc. Prof.

GSFC U 263

ORGANIZATION University of Nevada, Reno, Remote Sensing Lab

NDPF USE ONLY

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N \_\_\_\_\_

ID \_\_\_\_\_

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	range	playa	desert	
1070-17470 M	x	x	x	
-17493 M	x	x	x	
1091-18044 M				agriculture
-18050 M	x	x	x	mountains
-18053 M	x	x	x	reservoir, agriculture
-18055 M	x	x	x	lake
-18062 M	x		x	mountains, lake
1092-18102 M		x		lake
-18105 M		x	x	agriculture
-18111 M	x	x	x	lake
-18114 M	x	x	x	mountains, lake
1093-18161 M	x	x	x	mountains, lake
-18164 M	x	x	x	lake
-18170 M	x	x	x	lake
-18173 M				agriculture
1094-18215 M				lake, agriculture
-18222 M				lake, agriculture
1104-17384 M	x	x	x	
1105-17434 M	x		x	
-17440 M	x	x	x	lake
-17443 M				agriculture

\*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

MAIL TO NDPF USER SERVICES  
CODE 563  
BLDG 23 ROOM E413  
NASA GSFC  
GREENBELT, MD. 20771  
301-982-5406



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ID \_\_\_\_\_

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	basin, range	playa	desert	
1106-17474 M	x			mountains, lake, agriculture
-17481 M	x	x	x	mountains, lake
-17483 M	x	x	x	mountains
-17490 M	x	x	x	mountains
-17492 M	x	x	x	mountains, lake
-17495 M	x	x	x	lake
1107-17532 M				
-17535 M				
1108-18005 M	x	x	x	
1109-18064 M	x	x	x	
1112-18221 M				
-18224 M	x			mountains, agriculture

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